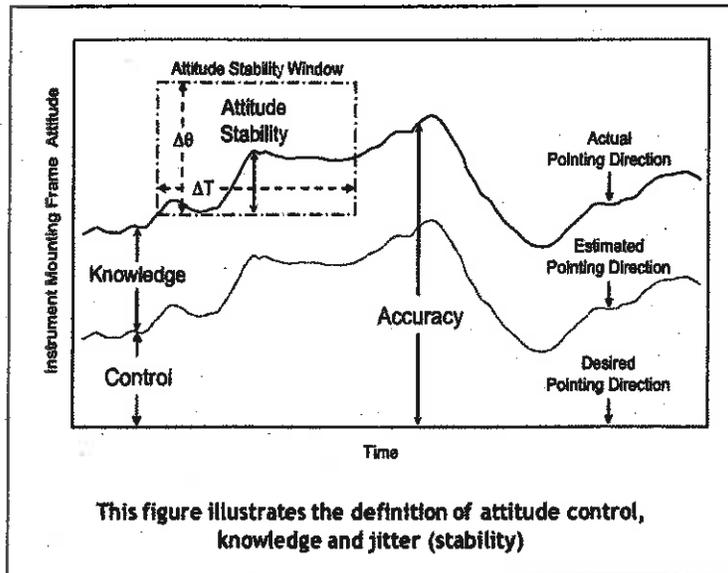


Questions	NASA Responses
<p>1. There are two different numbers given for jitter:</p> <p>a. Pointing Stability (Jitter): 3 arcsec/0.16 sec</p> <p>b. Jitter: Jitter shall be less than 10 arcsec Root Mean Squared</p> <p>c. Please provide a detailed definition of these jitter requirements, especially the 10 arcsec RMS value. What does this refer to, and what is the difference between this and the pointing stability jitter value given? Jitter specifications are often provided using power spectral densities, providing different allowable jitter levels for different frequency ranges. Will NASA provide information like this in the future? In order to characterize, predict, and mitigate jitter, we will need information about the rotating telescope mechanism.</p>	<p>The "Pointing Stability (Jitter)" reference is a stability requirement (frequency piece – see picture below).</p> <p>The 10 arcsec jitter requirement is an overall RMS value.</p> <p>NASA does not plan to provide a power spectral density at this time because the integration time of the instrument is much faster than any vibration that the spacecraft can produce.</p>
<p>2. Please clarify; the rotating telescope will be gimballed up to +/- 20 deg in a period of 15 seconds (from section 4.2.1)?</p>	<p>Yes.</p>
<p>3. With a 290kg payload, may it be assumed that the total S/C mass will be approximately 400 kg? Is there any limits?</p>	<p>NASA does not have an assumption for the total spacecraft mass. The mass will be limited by the selected launch vehicle.</p>
<p>4. Should it be assumed a fully redundant prop system is required?</p>	<p>No, the prop system does not need to be fully redundant. It is up to the vendor to determine how best to achieve the reliability required for the controlled deorbit.</p>
<p>5. Information to determine DeltaV requirements.</p> <p>a. What is the deorbit plan?</p> <p>b. Prop ACS required?</p>	<p>The vendor should assume a controlled spacecraft reentry and the necessary subsystems to achieve it.</p>
<p>6. Would Electric Propulsion system be considered?</p>	<p>Yes, if it can meet the requirements.</p>
<p>7. What is the customer's stance on COTS components? TRL 8 components?</p>	<p>NASA is willing to consider both COTS and TRL 8 components, but they must meet the MAR requirements. Also, the</p>

	vendor should consider the risk associated with them.
8. Would a minimum tracking elevation of 10 degrees for PACE is acceptable to NASA?	The minimum tracking elevation is dependent on the ground station and its masking. NASA will provide the ground network that would be used for mission operations. If the spacecraft vendor is performing the operations, then the operations team would work with the provided network to determine what elevations would be appropriate in order to maintain a low BER for capture of the science data.
9. For both the S-transponder and X-band transmitter, can we assume a 2:1 redundancy? Is this acceptable to NASA?	X-band is for science data and does not necessarily need redundancy. S-band is for spacecraft housekeeping and commanding and should be considered for redundancy. It is up to the vendor to determine how best to achieve the reliability required for the controlled deorbit.
10. What is the nominal availability of the X-band data downlink?	The 95% probability relates to spacecraft availability (not availability of the end-to-end system).
11. Regarding communications at a rate of 30 Mbps during the sunlit portion of the orbit; can NASA provide more clarification of the typical planned operation	If this question is referring to Section 8 (Direct Broadcast), the spacecraft will not send more than 30 Mbps to be downlinked through direct broadcast. The spacecraft should direct broadcast from pole to pole on the sunlit side of the orbit.
12. PACE is a one-off build, correct? No spares or sister spacecraft?	Yes.

<p>13. The RFI does not express requirement/preference regarding spacecraft separation interface or device. Can we assume that choice is completely up to us?</p>	<p>Yes.</p>
<p>14. Is NASA open to a dual stacked launch or does PACE require a dedicated LV? Are non NLS II launch vehicles available for consideration?</p>	<p>PACE does not require a dedicated launch vehicle, but the vendor should meet the required launch date (launch date and costs cannot be affected by companion payloads). Yes, non NLS II launch vehicles can be considered.</p>
<p>15. The electronics box for the OCI is quoted as being 0.60 x 0.24 x 0.15 m. This appears rather large. Can NASA confirm the volume?</p>	<p>The volume is correct.</p>
<p>16. The electronic boxes are described as containing other units. What is the configuration of the units? Are they separated units or in a stacked configuration?</p>	<p>The instrument electronics boxes are separate units. All of them will be accommodated on the instruments, except for one of the OCI electronics boxes.</p>
<p>17. In regards to the instruments. Can a CAD drawing be provided? There are requirements for thermal separation, shielding and radiator exposure, which lead to questions as to how NASA envisions the instruments to be integrated into the spacecraft. What portions of the instruments are expected to be enclosed and not enclosed in the spacecraft body and how does that affect shielding and thermal requirements?</p>	<p>An annotated graphic of one concept for the OCI is included below. Several providers are being considered for the polarimeter, so detailed information on this instrument is not available at this time.</p>



Annotated Graphic of One Concept for the OCI Instrument

